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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/801,565

03/17/2004

Young-Nam Kim

IK-0084

1905

34610 7590 03/15/2007
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EXAMINER

ING, MATTHEW W

ART UNIT

PAPER NUMBER

3637

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/15/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/801,565

Applicant(s)

KIM, YOUNG-NAM

Examiner

Matthew W. Ing

Art Unit

3637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2006 & 15 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 December 2006 has been entered.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 104b' (see the right-hand side of Figure 4).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

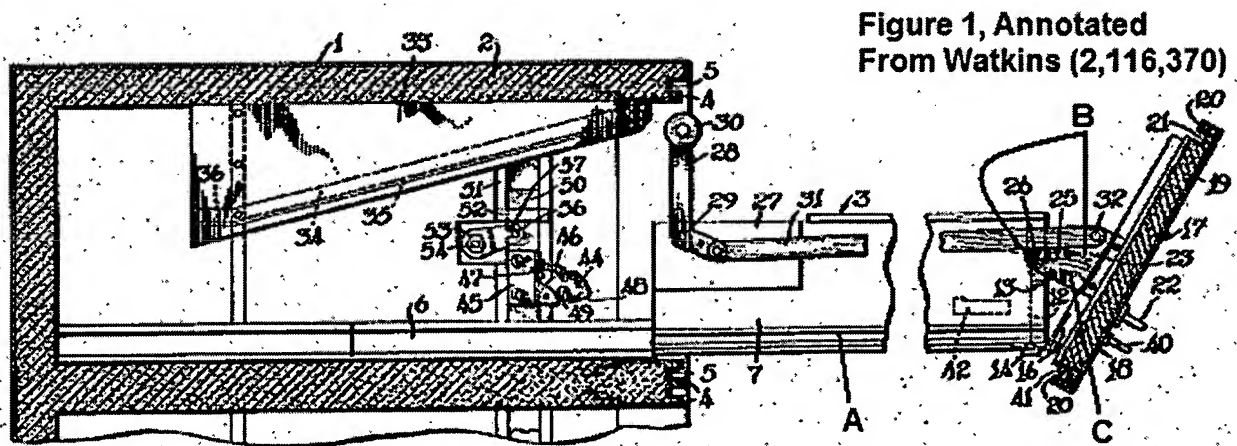
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-2 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins (2,116,370) in view of DE3221073.

5. Watkins teaches the structure substantially as claimed, including: a door (17) configured to selectively open and close a storage space in a refrigerator body (1), by being drawn out and pushed into the refrigerator body in a manner in which a drawer is moved, the door being capable of being pivoted about a lower end of the door (see Figure 1); at least one support frame (7) hingedly connected (16) to a rear surface of the door thereby creating a hinge connection (16) to allow the door (17) to pivot about the lower end of the door (17) and inherently capable of having a storage box for storing an object to be seated behind the door (see Figure 1); at least one movable rail (Item A of Figure 1, Annotated) formed on the support frame (7) and configured to be engaged with at least one guide rail (6) formed on an inner surface of a side wall of the refrigerator body (1) and guide movement of the at least one support frame (see column 2, lines 3-4); and at least one cover bracket (i.e., the portion of Item 23 below Item 25 - Item C in Figure 1 Annotated) protruding backward from the rear surface of the door (17) and configured to cover a gap between the support frame (7) and the rear surface of the door (17) and the hinge connection (16). The examiner points out that the drawer-type door in the structure

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of Watkins is inherently capable of allowing an appropriately-size storage box to be seated behind the door. The examiner also points out that the phrase “refrigerator body” can encompass any insulated structure that is capable of holding items typically stored in refrigerators (e.g., meats, fruits, vegetables, eggs, frozen dinners, etc.). The examiner also points out that the cover bracket (C) of Watkins covers at least a portion of the triangular gap between the support frame (7), the rear surface of the door (17), and the hinge connection (16).



6. The only difference between Watkins and the invention as claimed is that Watkins fails to teach a cover bracket capable of completely covering a triangular space between the support frame, the rear surface of the door, and the hinge connection when the door is opened.

7. DE3221073, however, teaches a cover bracket (9) capable of completely covering a triangular space between a support frame (11), the rear surface of a door (5), and a hinge connection (10) when the door is opened. See Figure 1.

8. It would have been obvious to one of ordinary skill in the art to modify the cover bracket of the structure of Watkins to completely cover the triangular space between the

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support frame, the rear surface of the door, and the hinge connection of said structure, as taught by DE3221073, in order to improve the aesthetic appearance & safety of said structure, thereby providing the structure substantially as claimed.

9. Regarding claim 2, in the structure of Watkins, the cover bracket (C) is located outside of the support frame (7) when the door (17) stands upright. See Figures 2-3.

10. Regarding claim 4, Watkins teaches a structure wherein the door (17) further includes at least one tilting latch formed at one side of the rear surface of the door (17), the door having a lower end hingedly assembled (16) with the support frame (7), the tilting latch having a latch jaw (i.e., those portions of Item 23 located behind and above Item 25 - designated as Item B in Figure 1 Annotated) and the support frame (7) having a stopper pin (26), wherein the latch jaw (B) and the stopper pin (26) can be engaged with each other to limit a range within which the door can be pivoted (see Figures 1 and 3).

11. Regarding claim 6, the structure of Watkins includes at least one movable rail (Item A of Figure 1, Annotated) formed on the support frame (7); and at least one guide rail (6) formed on an inner surface of a side wall of the refrigerator body (1), wherein the guide rail (6) is engaged with the movable rail (A), and guides movement of the support frame (see column 2, lines 3-4).

12. Regarding claim 7, in the structure of Watkins, the cover bracket (C) is located outside of the support frame (7) when the door stands upright. See Figures 2-3.

13. Claims 3, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins (2,116,370) and DE3221073 as applied to the claims, further in view of Jenkins (5,487,239). Watkins and DE3221073 teach the structure substantially as claimed above, including a drawer-type refrigerator door wherein said door is capable of being pivoted

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about the lower end of said door, the only difference being Watkins and DE3221073 fail to teach a door basket for storing an object, said door basket being disposed at an upper portion of the rear surface of the refrigerator door. Jenkins, however, teaches the inclusion of a door basket (46) for storing an object, said door basket being disposed at an upper portion of the rear surface of the refrigerator door. It would have been obvious to one of ordinary skill in the art to incorporate the door basket of Jenkins into the door of the structure of Watkins as modified by DE3221073 in order to provide a space for storing butter or eggs, thereby providing the structure substantially as claimed.

14. Regarding claim 9, Watkins teaches a structure wherein the door (17) further includes at least one tilting latch formed at one side of the rear surface of the door (17), the door having a lower end hingedly assembled (16) with the support frame (7), the tilting latch having a latch jaw (i.e., those portions of Item 23 located behind and above Item 25 - designated Item B in Figure 1 Annotated) and the support frame (7) having a stopper pin (26), wherein the latch jaw (B) and the stopper pin (26) can be engaged with each other to limit a range within which the door can be pivoted (see Figures 1 and 3).

15. Claims 10 and 11, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Meek (2,711,944) in view of Watkins (2,116,370) and DE3221073.

16. Meek teaches the structure substantially as claimed, including a refrigerator body (10); a door (25) configured to selectively open and close a storage space in the refrigerator body (10), by being drawn out and pushed into the refrigerator body (10) in a manner in which a drawer is moved (see Figure 2); at least one support frame (31) that is inherently capable of having a storage box for storing an object to be seated behind the

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door (see Figure 2); at least one movable rail (80) formed on the support frame and configured to be engaged with at least one guide rail (63) formed on an inner surface of a side wall of the refrigerator body (10) to guide movement of the support frame (see Figure 4).

17. The only difference between structure of Meek and the invention as claimed is that, Meek fails to teach a door capable of being pivoted about a lower end of the door; at least one support frame hingedly connected to a rear surface of the door thereby creating a hinge connection to allow the door to pivot about the lower end of the door and inherently capable of having a storage box for storing an object to be seated behind the door; and at least one cover bracket protruding backward from the rear surface of the door and configured to completely cover a gap between the support frame and the rear surface of the door and the hinge connection when the door is opened.

18. Watkins, however, teaches a door (17) capable of being pivoted about a lower end of the door (see Figure 1); at least one support frame (7) hingedly connected (16) to a rear surface of the door thereby creating a hinge connection (16) to allow the door (17) to pivot about the lower end of the door (17) and inherently capable of having a storage box for storing an object to be seated behind the door (see Figure 1); and at least one cover bracket (i.e., the portion of Item 23 below Item 25 - Item C in Figure 1 Annotated) protruding backward from the rear surface of the door (17) and configured to cover a gap between the support frame (7) and the rear surface of the door (17) and the hinge connection (16). The examiner points out that the cover bracket (C) of Watkins covers at least a portion of the triangular gap between the support frame (7), the rear surface of the door (17), and the hinge connection (16) when the door is opened.

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19. Additionally, DE3221073 teaches a cover bracket (9) capable of completely covering a triangular space between a support frame (11), the rear surface of a door (5), and a hinge connection (10) when the door is opened. See Figure 1.

20. It would have been obvious to one of ordinary skill in the art to replace the door in the structure of Meek with the pivoting door taught by Watkins in order to allow objects to be more easily positioned within, and removed from the refrigerator; and to modify the cover bracket of the structure of Watkins to completely cover the triangular space between the support frame, the rear surface of the door, and the hinge connection of said structure, as taught by DE3221073, in order to improve the aesthetic appearance & safety of said structure, thereby providing the structure substantially as claimed.

Response to Arguments

21. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

22. Whereas the objection to claim 6 has been rendered moot by applicant's amendment of this claim, said objection has therefore been withdrawn.

23. Whereas the claim rejections under 35 U.S.C. 112, second paragraph, have been rendered moot by applicant's amendments to the claims, these rejections have therefore been withdrawn.

24. In response to applicant's argument that "Watkins discloses a file cabinet, not a drawer-type door opening/closing structure for a refrigerator", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it

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meets the claim. Furthermore, the examiner also points out that the phrase "refrigerator body" can encompass any insulated structure that is capable of holding items typically stored in refrigerators (e.g., meats, fruits, vegetables, eggs, frozen dinners, etc.).

Conclusion

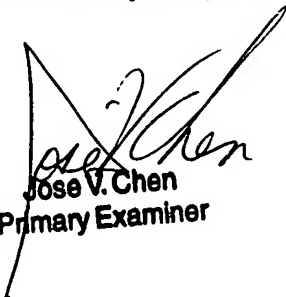
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew W. Ing whose telephone number is (571) 272-6536. The examiner can normally be reached on Monday through Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lanna Mai can be reached on (571) 272-6867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MWI 

26 February 2007


Jose V. Chen
Primary Examiner

PTO 07-741

German Patent No. 32 21 073 A1
(Offenlegungsschrift)

DRAWER

[Inventor unknown]

UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. NOVEMBER 2006
TRANSLATED BY THE MCELROY TRANSLATION COMPANY

FEDERAL REPUBLIC OF GERMANY
 GERMAN PATENT OFFICE
 PATENT NO. 32 21 073 A1
 (Offenlegungsschrift)

Int. Cl. ³ :	A 47 B 88/00
Filing No.:	P 32 21 073.6
Filing Date:	June 4, 1982
Date Laid-open to Public Inspection:	December 8, 1983

DRAWER

[Schublade]

Inventor:	Request for anonymity
Applicant:	Richard Kurz

Claims

/2*

1. Drawer having a base plate, two side walls and having a front plate, arranged in a guide in a manner allowing back and forth movement, characterized in that the front plate (5) is of a fold-out design and in that provided on at least one side wall (2) and having a combined action with said guide is a brace (8), which holds the front plate (5) in the closed position (S) in the pushed-in state and for an at least partially withdrawn drawer (1) is automatically brought into the folded out position.

2. Drawer according to Claim 1, characterized in that the brace (8) includes a hinged plate (9), arranged in a pivoting manner on the side wall (2), to which the front plate (5) is mounted, and a pivoted lever (13) the front end (13a) of which, allocated to the front plate (5), has a hook-shaped design and which has a combined action with a pin (18) projecting from the hinged plate (9).

3. Drawer according to one of Claims 1 or 2, characterized in that along the upper edge of the pivoted lever (13) is provided a first override diagonal (15) which has a combined action with a cam (22) which is arranged in a stationary manner on the guide (7) in the drawer

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* [Numbers in the margin indicate pagination of the original foreign language text.]

compartment (6) receiving the drawer (1) and lifts the pivoted lever (13) when the drawer (1) is withdrawn.

4. Drawer according to one of Claims 1-3, characterized in that the pivot point (14) of the pivoted lever (13), from the viewpoint of the front plate (5), is placed behind the center of gravity (26) of the pivoted lever (13).

5. Drawer according to Claims 3 and 4, characterized in that the first override diagonal (15) from the viewpoint of the front plate (5), is placed behind the pivot point (14) of the pivoted lever (13).

6. Drawer according to one of the preceding claims, characterized in that the aft end (13b) of the pivoted lever (13) is of a forked design and in that position in the fork is a limit stop pin (20) fixed to the side wall (2) in order to delimit the pivot radius of the pivoted lever (13).

7. Drawer according to one of the preceding claims characterized in that provided on the front of the pivoted lever (13) facing the front plate (5) is a second override diagonal (17) for the pin (18) projecting from the hinged plate (9).

8. Drawer according to one of the preceding claims, characterized in that a third override diagonal (16) for the cam (22) is developed at the aft end (area 13b) of the upper edge of the pivoted lever, which lifts the pivoted lever (13) when the drawer (1) is pushed into a drawer compartment (6).

/4

9. Drawer according to one of the preceding claims, characterized in that the hinged plate (9) features a flange (9a) standing away from the plane of the hinged plate as a 90° fold, by means of which the front plate (5) is attached by means of screws (19) to the hinged plate (9).

10. Drawer according to one of the preceding claims, characterized in that arranged between the side wall (2) and the hinged plate (9) is a spacer plate (11) which features a limit stop part (21) against which is supported a fold on the aft edge (9b) of the hinged plate (9) standing away in the direction of the side wall (2), when the front plate (5) is folded out from the closed position (S) by 90°.

11. Drawer according to one of the preceding claims, characterized in that arranged in the area between the front hook-shaped end (13a) and the pivot point (14) of the pivoted lever (13) is a guide bracket (24) for the pivoted lever (13).

12. Drawer according to one of the preceding claims, characterized in that the pivoted lever (13), hinged plate (9), spacer plate (11), guide bracket (24), limit stop pin (20) and the pin (18) are mounted to or linked to a carrier plate (12) of the brace (8) which follows the inner surface of the side wall (2) and is mounted thereto.

13. Drawer according to one of the preceding claims, characterized in that the fold-down front plate (5) can be folded down against the action of a brake.

/3a

14. Drawer according to Claim 13, characterized in that the brake is composed of a tension spring (28), one end of which is mounted to the brace (8) and the other end of which is mounted to the hinged plate (9).

15. Drawer according to Claims 13 and 14, characterized in that the hinged plate (9) is provided with a fold (30) which, twisted by 90°, is arranged relative to the front plate (5) about the pivot axis (10) and in that one end of the spring (28) is held in a drilled hole (31) of said fold (30).

16. Drawer according to Claims 13-15, characterized in that several drilled holes (31) are provided in the fold (30) for an optional mounting of the end of the spring (28).

The invention relates to a drawer having a base plate, two side walls and having a front plate, arranged in a guide in a way allowing back and forth movement. /5

For generally known, conventional drawers, the side walls, front plate, and base plate are connected to each other in a fixed manner. Corresponding grips on the front plate are used to withdraw the drawer from the drawer compartment in which it is received or to push same into said compartment. The objects accommodated in the drawer are placed therein or taken out from above. This results in disadvantages in many respects. Although it generally is desirable to fully utilize the storage space of a drawer, an object having dimensions approaching the interior dimensions of a known drawer cannot be placed in said drawer. This makes it difficult, namely, to push one's hands between the side walls and the object, such that an object of this type can be removed from above only in a very awkward manner. /6

It also is disadvantageous that an array of equipment, e.g., Phonographs or video equipment which must be operated both from above as well as from the front cannot be accommodated in the known drawer. Operation from above is indeed possible, but operation from the front side is not.

Therefore, the underlying purpose of the invention is to create a drawer that, at least in a withdrawn state, is accessible from the front making it suitable especially for built-in equipment requiring operation both from above as well as from the front.

This problem is solved in that the front plate is of a fold-out design and in that provided on at least one side wall and having a combined action with said guide is a brace, which holds the front plate in the closed position in the pushed-in state and for an at least partially withdrawn drawer is automatically brought into the folded out position. This makes it possible for objects placed in the drawer to be accessible from the front in a withdrawn position, which does not unconditionally have to be the fully withdrawn position, since the front plate is then folded out. This yields the possibility, first, of a substantially simpler removal of the objects placed therein, but also however of the accommodation of video equipment, cassette recorders

and the like in a drawer of this type, which for operation require access both from above as well as from the front. This function of the drawer, or the automatic folding out of the front plate is achieved with a corresponding brace which can be mounted to each side wall of the drawer.

For an advantageous embodiment, the brace includes a hinged plate retained on the side wall in a pivoting manner, to which the front plate is mounted. The front plate, rather than being mounted by means of hinges or other parts to the base plate, is mounted directly to the brace, allowing for a simple installation.

Control of the front plate can be achieved in a simple manner if the brace includes a pivoted lever having a hook-shaped design on the end allocated to the front plate and having a combined action with a pin projecting from the hinged plate. When said pivoted lever is lifted, its working connection with the pin is suspended and the front plate can be folded out. In the locked position, the hook-shaped end of the pivoted lever snaps over the pin to bring about a reliable lock. In a very advantageous improvement of the invention, a first override diagonal is provided along the upper edge of the pivoted lever for a cam arranged in a fixed manner on the drawer guide in a drawer compartment receiving the drawer, which cam lifts the pivoted lever when the drawer is withdrawn. Thus, withdrawing the drawer by a certain amount automatically unlocks the front plate since the cam arranged in a fixed manner in the drawer compartment slides upon the override diagonal as the drawer is withdrawn, pressing the pivoted lever into an unlocking position. A manual unlocking then is not required, since this takes place automatically by means of the combined action of the parts. /7

In this connection it is further to advantage, if the pivot point of the pivoted lever, from the viewpoint of the front plate, is placed behind the center of gravity of the pivoted lever. This causes the pivoted lever to fall automatically, based on its own weight, to the locking position when the drawer is pushed shut, if the front plate has been folded up and the corresponding push-in position has been reached for which the cam no longer has a combined action with the override diagonal. /8

Placing the override diagonal, from the viewpoint of the front plate, behind the pivot point of the pivoted lever keeps the amount of force that has to be overcome when the cam slides upon the override diagonal correspondingly slight based on the resulting lever path.

It also is favorable if the back end of the pivoted lever is of a forked design and if a limit stop pin fixed on the side wall is arranged in the fork, since this limits the pivot radius of the pivoted lever. In the withdrawn position of the drawer, this causes the pivoted lever also to assume the position that it holds in the locked position and also to be held in said position. It does not continue to fall, then, in the direction of the base plate. This brings the advantage in particular that in a case where a second override diagonal for a pin projecting from the hinged plate is provided at the front of the pivoted lever facing the front plate, the pivoted lever is

automatically lifted, when the front plate is closed, by means of the pin sliding along said second override diagonal, which can cause a locking to occur without the need to touch the pivoted lever.

In an advantageous improvement, the back end of the upper edge of the pivoted lever is designed with a third override diagonal for the cam which lifts the pivoted lever when pushing the drawer into a pivoted lever compartment [sic; drawer compartment; see Claim 8]. This makes it possible to push in the drawer even in a case where the cam, in a withdrawn position of the drawer or especially even for a fully removed drawer, no longer has a combined action with the pivoted lever. For a favorable mounting of the front plate with regard to the hinged plate, it is favorable for the hinged plate to feature a flange standing away from the plane of the hinged plate as a 90° fold, at which the front plate is attached by means of screws to the hinged plate. This enables a reliable mounting of the front plate.

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In an advantageous improvement, arranged between the side wall and the hinged plate is a spacer plate featuring a limit stop part against which is supported a fold on the aft edge of the hinged plate standing away in the direction of the side wall when the front plate is folded out from the closed position by 90°. A limit stop formed in this way ensures that a front plate which is folded out can be loaded with a high amount of weight without the occurrence of damage.

In order to prevent the pivoted lever, in its path between the pivot point and the hook-shaped front end from being able to bend away from the side wall in a lateral direction, it is favorable for a guide bracket to be arranged in this area as a lateral guide for the pivoted lever.

It is very advantageous if the pivoted lever, hinged plate, spacer plate, guide bracket and the limit stop pin are mounted on or linked to a carrier plate which follows the inner surface of a side wall and is mounted thereto. This procures a brace designed as a finished component, which can be mounted to the inner side of a side wall of a drawer and to which the front plate then can be attached with screws. This makes the construction of a drawer according to the invention especially simple, since during manufacture the corresponding individual parts of the brace do not have to be mounted separately to the side wall, which, naturally, also would be possible.

An embodiment of the invention is described and expounded upon in the following with the aid of the drawings. Shown are:

Figure 1 is a perspective representation, partially in section, of a drawer according to the invention,

/10

Figure 2 is a representation showing the principle of operation and

Figure 3 likewise is a representation showing the principle in order to explain the operation of a drawer according to the invention.

In Figure 1, the entirety of a drawer, only part of which is represented, is designated as (1). The drawer is composed of side walls, a hind wall (3), the base plate (4) as well as the front

plate (5), which is of a fold-out design. On the side wall which is not shown, the drawer is provided with a brace as that recognized in the figure on the side wall (2), such that it suffices to expound upon the invention with the aid of the representation shown.

Mounted to the inner surface of the side wall (2) is a brace (8) which includes a carrier plate (12) upon which are arranged the essential functioning parts of the brace. The carrier plate (12) is screw-mounted from the inside against the side wall (2) by means of screws (25). Retained in an articulated manner at the front end of the carrier plate (12) is a hinged plate (9) which pivots about a point (10) and which is provided with a 90° bend which creates a flange (9a) in order to mount the front plate (5) by means of the indicated screws (19). In addition, the brace (8) features a pivoted lever (13) arranged on the carrier plate (12), the front end (13a) of which pivoted lever [13] has a hook-shaped design and which has a combined action in a way described in further detail below, with a pin (18) projecting from the hinged plate (9). The pivoted lever is retained on the carrier plate (12), likewise in a pivoted way, by means of the pivot point (14). The back end (13b) of the pivoted lever (13) is of a forked design and along the upper edge thereof is provided with a first override diagonal (15) which from the viewpoint of the front plate (5) rises toward the rear, and also is provided with a third override diagonal (16) sloped in the opposite direction. As is further evident from Figure 1, the pivoted lever is bent in such a way that a center section thereof, in the area of which is located the pivot point (14), runs directly next to the carrier plate (12), while the two end sections (13a, 13b) assume a clearance from the carrier plate (12) which at the front end (13a) is selected to be great enough that the hinged plate (9) can pivot through [the space] between said end (13a) and the carrier plate and at the back end (13b) is provided in order to enable a reliable combined action between the cam (22) and the pivoted lever.

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The cam (22) is developed on the drawer compartment (6), in which the drawer is guided in a way not shown in greater detail, at a suitable location as a fixed cam and, in the example shown, projects from the front, upper delimitation (7) of the drawer compartment (6) downward into the drawer. Said cam (22) has a combined action with the override diagonals (15) or (16) in a way described in greater detail below, when withdrawing or pushing in the drawer in such a way that the pivoted lever is moved about the pivot point (14). The pivot range is delimited by means of a limit stop pin (20) arranged in the fork at the back end (13b) of the pivoted lever (13) and connected to the carrier plate (12).

A bracket (24), which in the area in which the pivoted lever (13) passes through said bracket (24), assumes a clearance from the carrier plate (12) roughly corresponding to the thickness of the pivoted lever such that the pivoted lever is guided laterally by this means, is mounted to the carrier plate (12) as a lateral guide for the pivoted lever. The bracket is developed such that the pivoted lever has available the requisite pivot angle.

As likewise is indicated in Figure 1, seated on the carrier plate (12) is a spacer plate (11) in the shape of a quarter circle, the front upper end of which transitions into a limit stop part (21) upon which comes to rest, for a hinged plate (9) which is fully pivoted out, a projection (23) projecting from the aft edge (9b) of the hinged plate (9) in the direction of the carrier plate (12). The radius of the fixed spacer plate is, up to the limit stop (21), smaller, by the measure of the height of the projection (23), than the radius of the hinged plate (9) arranged concentric to the spacer plate. The projection (23) projects from the hinged plate (9) by the measure of the thickness of the spacer plate, such that the projection comes to rest against the limit stop (21) in the folded-out position of the front plate, delimiting the pivot range of the front plate (5). The limit stop part is arranged such that the pivot range of the front plate (5) is 90°. The position shown in Figure 1 of the front plate (5) corresponds to an intermediate position during a folding out of the front plate (5).

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The combined action of the aforementioned parts of the brace (8) is further described in the following with the aid of the representations of the principles shown in Figures 2 and 3.

Figure 2 indicates the position the drawer assumes when pushed into the drawer compartment (6). The cam (22) is located a short distance behind the front plate (5). The pivoted lever (13) is in the lowered position shown, with the hook-shaped front end (13a), by means of the pin (18), arresting the hinged plate (9) and thus the front plate (5), such that said front plate [5] assumes its closed position (S) and is locked in this position. An automatic falling of the pivoted lever into the position shown is achieved in that the pivot point (14), from the viewpoint of the front plate (5), is placed behind the center of gravity (26) of the pivoted lever, such that the pivoted lever (13) assumes the position shown based on its own weight. The limit stop pin (20) which engages the fork at the back end (13b) of the pivoted lever, holds the pivoted lever (13) in the position and secures same from falling further in the direction of the base plate (4), not shown in Figure 2. If the drawer now is withdrawn, which can take place by grasping the hand grip (27), then the locked position initially remains until the tenon (22) comes into contact with the override diagonal (15). If the withdrawing process now is continued, then the cam (22) slides upon the first override diagonal (15), causing the pivoted lever (13) to pivot about its pivot point (14), since it is depressed in the area of the back end (13b) and naturally, is lifted by this means at the front end (13a). Such a position is shown in Figure 3. By means of the fact that the front end (13a) of the pivoted lever (13) is lifted by the combined action of the cam (22) with the override diagonal (15), the hinged plate (9) is unlocked, since the hook-shaped end (13a) releases the pin (18) at this time. The front plate (5) then can be brought, in the direction (O) of the arrow, into its open position. The front plate passes through a position at this time as shown in Figure 1. The cam (22) then is not in a working engagement with the pivoted lever (13) which, based on the aforementioned arrangement of the pivot point (14) to the center of gravity (26) has fallen

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and is held in the position shown in Figure 1 by means of the limit stop pin (20). The front plate (5) then can assume the fully folded out position.

If the drawer (1) is to be pushed in again, then the front plate (5) first is pushed up again. At this time, the pin (18) mounted to the hinged plate (9) slides along the second override diagonal (17) which is developed on the aft end of the pivoted lever (13) in such a way that the pivoted lever is lifted if the pin (18) is guided along said second override diagonal (17). In the closed position (S), the pivoted lever (13) automatically falls again and in turn assumes the position shown in Figure 2. During the pushing-in process, the pivoted lever does lift again, when the cam (22) slides over the third override diagonal (16) provided at the aft end (13b) of the pivoted lever (13), but falls again when a closed position has been reached in which the first override diagonal (15), from the viewpoint of the front plate (5), is located behind the cam (23) [sic; 22]. The front plate (5) then is re-locked.

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It naturally is conceivable to design a pivoted lever to be of a length such that it essentially extends across the entire depth of a drawer. In this case the same aforementioned action would be yielded, but with the difference that the cam (22) would still come to be positioned over the aft end (13b) of the pivoted lever (13) even in a fully withdrawn position of the drawer. In this case, the pivoted lever would be lifted at a maximum withdrawn position of the drawer and would not release the foldout catch until briefly before the drawer reached the maximum withdrawn position.

A spring (28) not represented in Figures 1 and 2 is indicated in Figure 3; one end of said spring [28] is suspended in a peg (29) projecting from the carrier plate (12) and the other end of which is suspended from a hole in a 90° fold (30) developed on the bottom edge (9b) of the hinged plate (9) and projecting toward the interior of the drawer. Said fold is provided with several drilled holes (31) allowing for the optional suspension of different springs having different amounts of prestress. Folding out the front plate (5) puts the spring (28) under tension such that it carries part of the weight of the front plate. The spring [28] therefore acts as a brake when unfolding [the front plate] and prevents the front plate (5) from dropping in an abrupt manner.

In a modification from the embodiment shown in Figure 1 of a brace (8), naturally, a spacer plate (11) can be done without. The limit stop (21) then is attached as a separated part at the location shown in Figure 1. The spring (28) then acts additionally as a guide for the hinged plate.

A drawer according to the invention can be realized relatively simply, since the brace (8) can be manufactured with the functioning parts as a finished component. It also is guaranteed that the front plate, being held in a very stable manner based on a screw-mounting over a large

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area (screws (19)) to a hinged plate having a quarter-circular-shape, can be heavily loaded to an extraordinary degree even in a folded out position.

